

Ser. No. 10/048,205
Amdt. dated October 23, 2003
Reply to Office action of April 23, 2003

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A tissue implant device configured to resist migration in tissue comprising a flexible helical spring formed from a filament having a rectangular cross-sectional profile, having a plurality of coils, each having an edge along which is formed at least one barb that engages surrounding tissue.
2. (original): An implant as defined in claim 1 wherein the at least one barb is proximally facing.
3. (original): The implant as defined in claim 1 wherein the barb faces radially outward from the spring.
4. (currently amended): ~~An implant as defined in claim 1 wherein the barb~~ has A tissue implant device configured to resist migration in tissue comprising a flexible helical spring having at least one barb having a rounded contour that engages surrounding tissue.
5. (original): An implant as defined in claim 1 wherein the at least one barb has a sharpened point configured for engaging tissue.
6. (cancelled)
7. (currently amended): An implant device as defined in claim ~~6~~ 1 wherein the spring comprises a plurality of coils, each having a proximally facing edge along which is formed a plurality of barbs.

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8. (currently amended): ~~An implant as defined in claim 1~~ A tissue implant device configured to resist migration in tissue comprising a flexible helical spring having at least one barb that engages surrounding tissue wherein the spring is formed from a plurality of materials each having different moduli of elasticity.

9. (original): An implant as defined in claim 1 wherein the spring is formed from metal.

10. (original): An implant as defined in claim 9 wherein the metallic material is stainless steel.

11. (original): An implant as defined in claim 1 wherein the moduli of elasticity of the spring varies along its length.

12. (original): An implant as defined in claim 1 wherein the spring is formed from a filament that has been etched from a flat sheet of material and wound into a spring configuration.

13. (original): An implant as defined in claim 12 wherein at least one barb is formed into the filament during the etching process.

14. (currently amended): A method of forming a tissue implant device comprising:

forming a ribbon shaped form having at least one projecting barb shape on an edge of the ribbon in a sheet of material by a photochemical etching process;
separating the ribbon formed from the sheet of material; and
wrapping the ribbon form into a helical coil shape, plastically deforming the ribbon so that it retains the coil shape with at least one projecting barb along the edge.

15. (cancelled):

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16. (currently amended): A method as defined in claim ~~45~~ 14 wherein at least one barb is formed along an edge that will be proximally facing after the ribbon is wrapped into a coil shape.

17. (currently amended): A method as defined in claim ~~45~~ 14 wherein a plurality of barb shapes are formed along an edge of the ribbon form so that the resultant coil ribbon has a plurality of projecting barbs along one edge of the coil.

18. (currently amended): A method of forming a tissue implant device as defined in claim ~~45~~ 14 further comprising forming a plurality of ribbons in a single sheet of material by photochemical etching process.

19. (new): A method of implanting a tissue implant device comprising:
providing a flexible helical spring having at least one coil with at least one projecting barb that engages surrounding tissue;
providing a delivery device having a penetrating distal tip and being configured to hold the tissue implant for delivery into tissue;
advancing the delivery device and loaded tissue implant into biological tissue so that the tissue is penetrated and the implant is inserted into the tissue;
releasing the tissue implant into the tissue;
withdrawing the implant delivery device.

20. (new): A method of delivering a tissue implant device as defined in claim 19 wherein the tissue is accessed surgically.

21. (new): A method of delivering a tissue implant device as defined in claim 19 wherein the biological tissue is accessed percutaneously.

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22. (new): A tissue implant device as defined in claim 9 wherein the spring is formed from a nickel titanium alloy.

23. (new): A tissue implant device as defined in claim 2 wherein the barb projects proximally away from the edge of the spring.

24. (new): A tissue implant device as defined in claim 3 wherein the barb projects radially outward from the edge of the spring at an angle inclined in the proximal direction.

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Amendments to the Drawings:

The attached sheets of drawings include changes to FIG. 1 and 8B. The sheet, which includes FIGS. 1-3, replaces the original sheeting including FIGS. 1-3. In FIG. 1 reference numeral 48 has been deleted. The sheet which includes FIGS. 8A-8C, replaces the original sheeting including FIGS. 8A-8C. In FIG. 8B reference numeral 94 has been deleted.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes